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A NEW SPECIES OF *PROTANAISSUS* SIEG, 1982 (CRUSTACEA: TANAIIDACEA: PERACARIDA), FROM SOUTH FLORIDA

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ABSTRACT A new nototanaid species, *Protanaissus floridensis*, is described from Biscayne Bay in southeastern Florida. Specimens were collected at a depth of 7 m in muddy sand substrata with associated aquatic vegetation (*Thalassia testudinum*). *Protanaissus floridensis*, which represents only the 4th species referable to the genus, is the first species of *Protanaissus* Sieg, 1982, known from the northern hemisphere. The new species is distinguished from the other 3 species of *Protanaissus* by 1) the dactylus of pereopod 1 shorter than combined length of propodus and carpus, 2) the dactylus of the cheliped with proximal spine on inner margin and proximal process on outer margin, 3) the fixed finger with 3–4 distal denticles on inner margin, and 4) the uropodal exopod uniaarticulated. A key distinguishing the species of *Protanaissus* is presented.

INTRODUCTION

During a study of the tanaidacean fauna from near shore and shelf waters of Florida, a number of new species were discovered including one belonging to the genus *Protanaissus* Sieg, 1982. The description of this new nototanaid species is the subject of this report.

Protanaissus is a little known genus previously comprising only 3 species. *Protanaissus* is closely related to *Tanaissus* Norman and Scott, 1906, whose members are known from the eastern and western North Atlantic but *Protanaissus* differs in having unfused maxilliped endites. The habitat of both *Protanaissus* and *Tanaissus* is exposed coastal beaches or sandy bottom submitted to strong currents (Bird 2002, current report). The genus has so far been found only in shallow water.

The terminology follows that of Larsen (2003). Type material has been deposited in the National Museum of Natural History (USNM) and Gulf Coast Research Laboratory Museum (GCRL).

SYSTEMATICS

Tanaidomorpha Sieg, 1980

Nototanaididae Sieg, 1976

Protanaissus Sieg, 1982

Diagnosis. (Modified after Sieg, 1982). Female: Body elongated and cylindrical. Antennule with 3 articles. Antenna with 5–6 articles. Mandible outer margin square, giving an impression of a robust broad incisor; molar pointed and weakly chitinized or tapering into a small round crushing surface. Labium consisting of 1 pair of lobes without lateral and medial processes. Maxillule strongly curved, almost S-shaped. Maxilliped basis fused

distally; endites not fused, narrower than basis and with 2 simple subdistal denticles. Chelipeds attached ventrally via sclerite. Pereopod 1–3 with small coxa. Pereopod 4–6 without coxa; dactylus and unguis shorter than propodus, fused to a claw. Pleopods present. Uropods biramous; endopod biarticulated; exopod with 1 or 2 articles.

Male: Unknown.

Protanaissus floridensis sp. nov. (Figures 1–3)

Material examined. Holotype (USNM 1019175): non-ovigerous female, body length 2 mm. Biscayne Bay, Miami Dade County, Florida. 25°63.4450'N. 80°21.8880'W. Depth 7 m. 11 July 2002. Bottom type: muddy sand/*Thalassia*. Benthic grab.

Paratype: 1 non-ovigerous female (GCRL 2057). Same locality.

Additional material. 1 juvenile female. Same locality.

Diagnosis. Female: Pereopod 1 dactylus shorter than combined length of propodus and carpus. Cheliped dactylus with proximal spine on inner margin and proximal process on outer margin. Fixed finger with distal denticles on inner margin. Uropod exopod uniaarticulated.

Etymology. Named for the type locality in shallow waters off Florida, USA.

Description. Adult, non-ovigerous female

Body (Figures 1A, 1B). Elongated, almost 10 times longer than broad.

Cephalothorax. Longer than combined length of pereonite 1 and 2. Eye lobes present, but visual pigmentation weak and without identifiable ommatidia.

Pereonites. Pereonites 1, 2, and 6 wider than long. Pereonites 3 and 5 as wide as long. Pereonite 4 longer than wide.

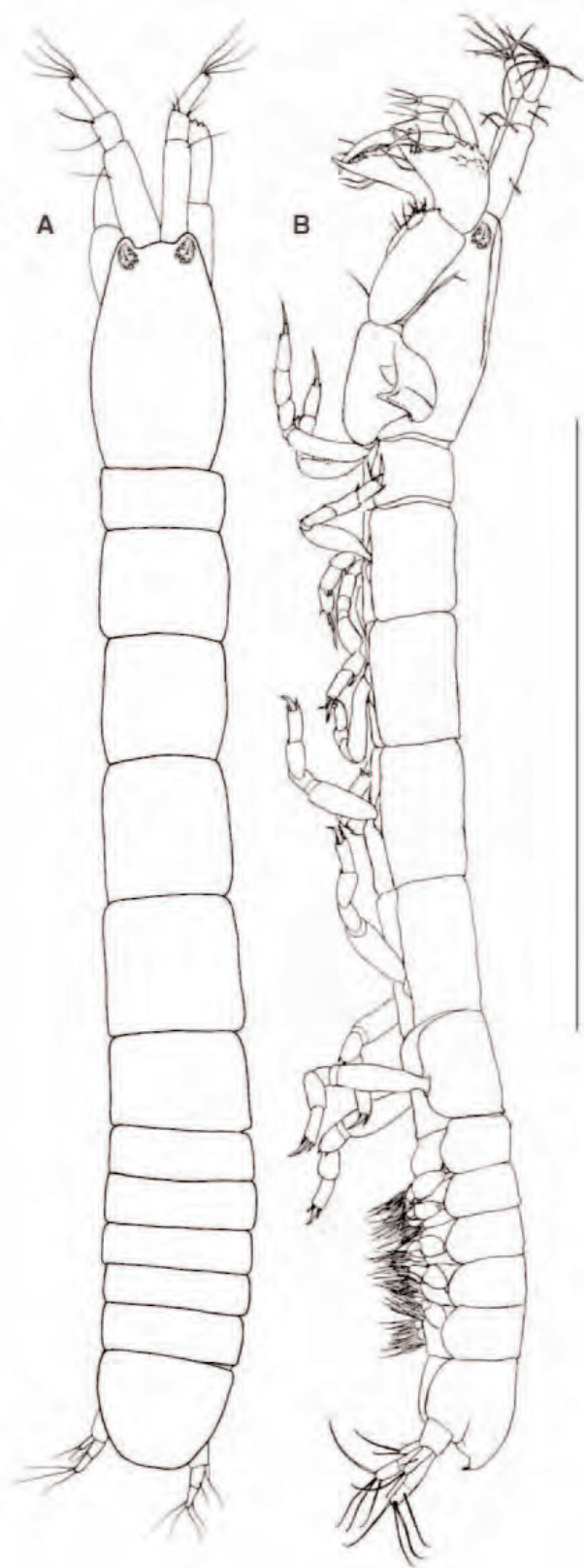


Figure 1. *Protanaissus floridensis*, holotype, non-ovigerous female. A) Dorsal view. B) Lateral view. Scale bar 1 mm.

Pleon. All pleonites subequal, as wide as pereon, all with pleopods. Pleotelson longer than combined length of 2 last pleonites, dorsally covered by a plate with pointed apex.

Antennule (Figure 2B). Shorter than cephalothorax. Article 1 longer than rest of antennule, with 1 simple medial and 5 distal setae. Article 2 shorter than article 3, with 1 simple and 1 sensory distal seta. Article 3 less than half the length of article 1, with 4 simple distal setae and 1 aesthetasc.

Antenna (Figure 2B). 0.8 times as long as antennule. Article 1 broader than following articles, naked. Article 2 shorter than article 1, with 1 simple distal seta. Article 3 longer than other articles, with 1 medial and 3 simple distal setae. Article 4 more than half as long as article 3, with 1 simple distal seta. Article 5 minute, with 4 simple distal setae.

Mouthparts. Labrum (Figure 2C) hood-shaped and naked. Right mandible not recovered. Left mandible (Figure 2D) molar process pointed, weakly chitinized and longer than incisor, with small distal depression. Incisor (Figure 2E) broad, with serrated upper margin. Lacinia mobilis pointing distally and with 2 denticles. Maxillule (Figure 2F) endite strongly bent, almost S-shaped, with 6 spiniform distal setae; palp shorter than endite; terminal setae shorter than palp. Maxilla (Figure 2F) ovoid. Labium not recovered. Maxilliped (Figure 2G) endites unfused, each with 2 simple subdistal setae. Basis fused distally; palp article 1 with outer margin longer than inner, naked; article 2 inner margin longer than outer, with 3 inner distal setae; article 3 elongate, with 3 inner distal setae; article 4 with 2 subdistal and 5 distal setae. Epignath not recovered.

Cheliped (Figure 2H). Basis divided unequally by sclerite, as long as carpus and twice as wide. Merus prominent, triangular, with 1 ventral seta. Carpus elongate, almost twice as long as wide, shorter than propodus inclusive of fixed finger, with 1 ventral seta. Propodus slender, with dorsal edge serrated distally, with 1 seta near dactylus insertion. Fixed finger with 2 ventral setae; 3 setae on inner margin, and with 3–4 distal denticles. Dactylus marginally longer than fixed finger, dorsally with long seta and prominent projection; inner margin with long seta-like spine.

Pereopod 1 (Figure 3A). Basis longer than 3 succeeding articles combined, naked. Ischium naked. Merus rounded, as long as carpus, naked. Carpus widening distally, shorter than propodus, naked. Propodus half the length of basis, with 2 simple distal setae and dorsal spine. Dactylus and unguis combined shorter than propodus.

Pereopod 2 (Figure 3B). As pereopod 1 except: merus and carpus with 1 spiniform ventral distal seta. Propodus shorter than on pereopod 1, with 1 spiniform distal seta.



Figure 2. *Protanaissus floridensis*. A) Sub-adult female, lateral view, scale bar 0.5 mm. B–H from non-ovigerous adult female. B) Antennule and antenna, scale bar 0.2 mm. C) Labrum, scale bar 0.05 mm. D) Left mandible, scale bar 0.05 mm. E) Left mandible, incisor, Scale bar 0.01 mm. F) Maxillule and maxilla, Scale bar 0.05 mm. G) Maxilliped, scale bar 0.05 mm. H) Cheliped, scale bar 0.2 mm.

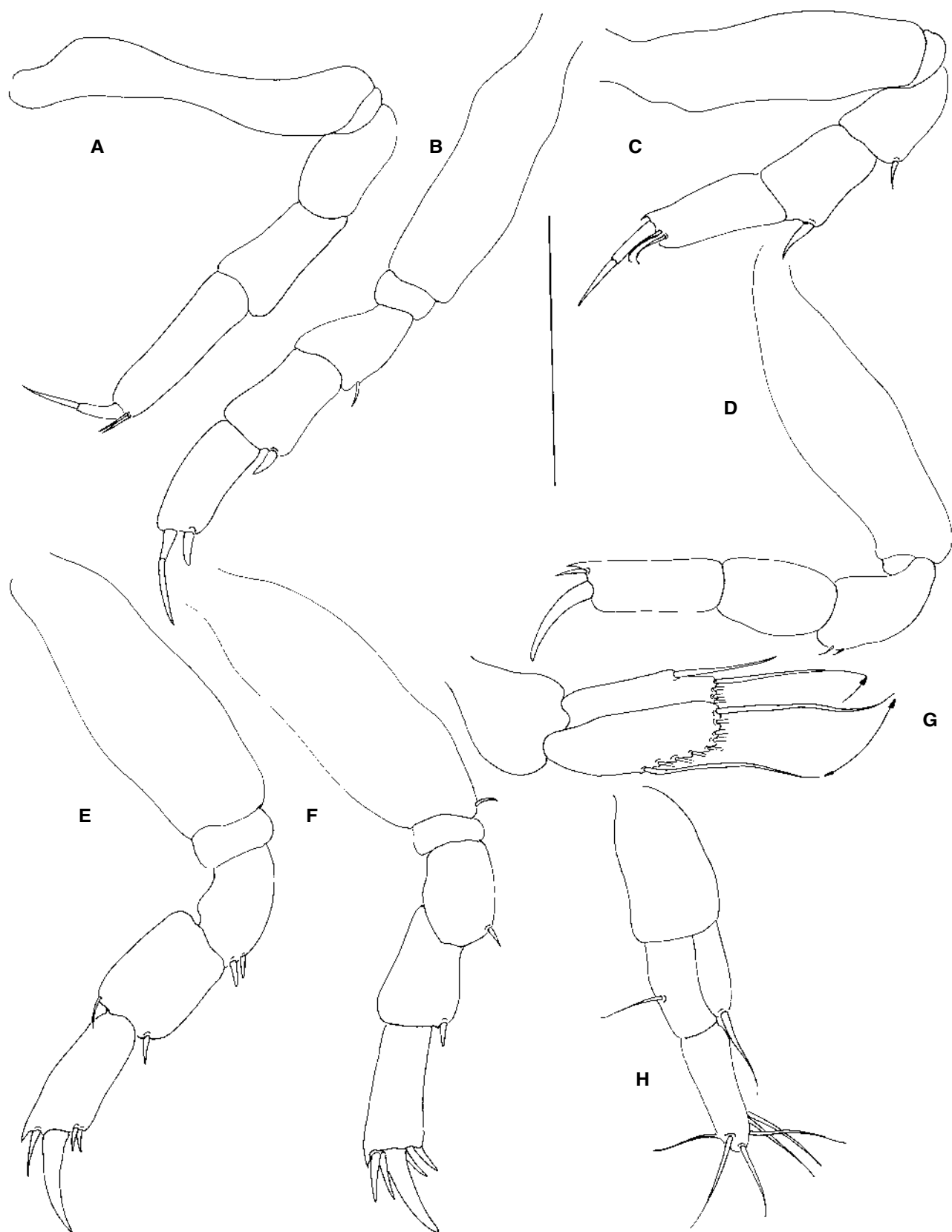


Figure 3. *Protanaissus floridensis*, dissected non-type non-ovigerous adult female. A) Pereopod 1. B) Pereopod 2. C) Pereopod 3. D) Pereopod 4. E) Pereopod 5. F) Pereopod 6. G) Pleopod. H) Uropod. Scale bar 0.1 mm.

Pereopod 3 (Figure 3C). As in pereopod 2 except: basis longer than 4 succeeding articles. Propodus with 2 curved distal setae.

Pereopod 4 (Figure 3D). Basis longer than 4 succeeding articles combined, naked. Ischium naked. Merus as long as carpus, with 2 simple ventral distal setae. Carpus naked. Propodus with 1 spiniform distal seta and dorsal spine. Dactylus and unguis fused into a claw.

Pereopod 5 (Figure 3E). As pereopod 4 except: merus with 2 spiniform ventral distal setae. Carpus square and with 2 distal setae. Propodus with 3 spiniform distal setae and dorsal spine.

Pereopod 6 (Figure 3F). Similar to pereopod 4 except: basis with 1 simple distal seta. Merus with 1 spiniform seta. Carpus with 1 spiniform distal seta. Propodus with 4 spiniform distal setae and dorsal spine.

Pleopod (Figure 3G). Basal article wider than rami. Exopod with 9 simple setae. Endopod with 5 outer and 1 inner simple setae.

Uropod (Figure 3H). Basal article more than half length of endopod, naked. Endopod with 2 articles, more than twice the length of exopod; first article with 1 medial seta; second article with 6 simple distal setae. Exopod with 1 simple distal seta.

Remarks. Some ontogenetic variations were noted between the adult and the sub-adult females. The pereonites are relatively more elongated and the pleopods more setose in the adult (Figures 1A, B) than in the sub-adult (Figure 2A). The pleotelson dorsal plate is also less pronounced in the sub-adult female than in the female.

Protanaissus floridensis occurs in the shallow shelf waters of South Florida, while *P. longidactylus* (Shiino, 1970) is only known from the Antarctic, *P. makrotrichos* Sieg, 1986, is found off the southern tip of South America, and *P. alvesi* Gutu, 1996 off the coast of Brazil. This distribution pattern suggests that additional species may occur along the Atlantic shelf of South America. The genus clearly has a eurythermal distribution. As with the other species of *Protanaissus*, *P. floridensis* is a rarely collected species. The species of *Protanaissus* are distinguished in the following key.

KEY TO THE SPECIES OF THE NOTOTANAIDID GENUS *PROTANAISSUS* SIEG, 1982.

1. Pereopod 1 dactylus shorter than combined length of propodus and carpus. Cheliped dactylus with proximal spine on inner margin and proximal process on outer margin. Fixed finger with at least 3 distal denticles on inner margin. Uropod exopod uniarticulated *P. floridensis*

Pereopod 1 dactylus longer than combined length of propodus and carpus. Cheliped dactylus without proximal spine on inner margin or proximal process on outer margin. Fixed finger without multiple distal denticles on inner margin. Uropod exopod biarticulated. 2

2. Mandibular molar pointed. Pereopod 6 propodus with 2 ventral simple setae of equal length *P. longidactylus*

Mandibular molar tapering into a small crushing surface. Pereopod 6 propodus with 1 ventral seta shorter than propodus and 1 ventral seta more than twice the length of propodus 3

3. Antennule stout (article 1 length/width (l/w) ratio < 2). Pereon with 2 parallel black stripes (freshly collected material). Maxilliped palp article 2 with 1 robust setulose seta. *P. alvesi*

Antennule slender (article 1 l/w ratio 2.8). Pereon without black stripes. Maxilliped palp article 2 without robust setulose setae. *P. makrotrichos*

DISCUSSION

Protanaissus was erected by Sieg (1982) to accommodate the species *Typhlotanais longidactylus* Shiino, 1970, which differs from the *Typhlotanais* generic definition in having a pointed and weakly chitinized mandibular molar, in contrast to the broad, heavily chitinized, molar which diagnose *Typhlotanais*. Shiino (1970:95) mentioned this but stated that many other characters resembled those of *Typhlotanais*. Sieg (1982:133) argued that the features of *T. longidactylus*, especially the shape of the molar and incisor, and the cheliped, point toward the genus *Tanaissus* Norman and Scott, 1909 within the Nototanaidae sensu Sieg, 1976 but that the unfused maxilliped endite of *T. longidactylus* warranted a new genus. Since Nototanaidae was erected as a family after the description of *T. longidactylus*, Shiino's (1970) reservations on the validity of the tanaidacean systematics were well founded and, as shown by Larsen and Wilson (2002), most of the genera previously belonging to Typhlotanidae (*Typhlotanais*, *Peraeospinosus*, *Typhlotanoides*, and

Paratyphlotanais) come together as a monophyletic group within the redefined family Nototanaididae. However, Nototanaididae as a family is only supported by a very weak Bremer index and is thus not a very stable family.

Protanaissus were previously only known from 2 Antarctic species, *P. longidactylus* and *P. makrotrichos* Sieg, 1986, and one species from Brazil, *P. alvesi* Gutu, 1996. *Protanaissus floridensis* is the first species of this genus found in the northern hemisphere. All species of *Protanaissus* are only found in sandy habitats in high current exposed environments on the upper continental shelf.

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